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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09,463,776	01/28/2000	HITOSHI TANIGUCHI	500,38128X00	6785

7590

07/08/2003

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EXAMINER

CHUNG, DAVID Y

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/463,776

Applicant(s)

TANIGUCHI ET AL.

Examiner

David Y. Chung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-3, 6-12, 15-25, 27 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 2 is/are allowed.
- 6) ☐ Claim(s) 1, 3, 6-12, 15, 23-25, 27, 32 and 34-37 is/are rejected.
- 7) ☐ Claim(s) 16-22 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 14
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3, 6-12, 15, 23 and 27 rejected under 35 U.S.C. 102(e) as being anticipated by Teragaki et al. (U.S. 6,123,431).

As to claim 1 and 3, Teragaki et al. discloses a backlight apparatus and light guide plate for use in a liquid crystal display. Note in figures 21-23, the light source 2 arranged on a side surface of light guide 20. The light guide has a light incident surface 20d, a light emitting surface 20a, and a plurality of pyramid shaped prisms for controlling the light outgoing from the emitting surface. In figure 23, since AngY is given as 120° , the angle of inclination of the prism is 30° . Since dx and dy are both given as $50\text{ }\mu\text{m}$, the area of the prism is 0.0025 mm^2 .

As to claims 6 and 7, Teragaki et al. discloses a plurality of pyramid shaped prisms with an equal length and width of $50\text{ }\mu\text{m}$. The prisms have substantially a

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square shaped when viewed from above. Because a square is defined as being a rectangle with all four sides equal, the prisms are considered to have a substantially rectangular shape.

As to claims 8 and 9, the pyramid shaped prisms disclosed by Teragaki et al. have equal length (dx) and width (dy). Therefore, the ratio between the two sides is 1.

As to claims 10 and 11, because the apex angle (AngY) of the prisms is given as 120° and the length (dx) and width (dy) are given as 50 μm , the height of the prisms would be 14.3 μm based on trigonometric calculations.

As to claim 12, figure 22 shows that the length (dx) of the prisms is parallel to the light source 2.

As to claim 15, figures 21-23 clearly show that the number of prisms per unit area increases from the side adjacent the light source toward the opposite side.

As to claim 23, figures 21-23 clearly show that the distance between the prism arrays 52 is increased from a portion near the light source toward a portion away from the light source.

As to claim 27, figure 21 clearly shows that the thickness of the light guide is different in accordance with a distance from light source 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 32 and 34-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Teragaki et al. (U.S. 6,123,431) in further view of Kashima et al. (U.S. 6,504,589), Ihara et al. (U.S. 5,999,238), and Hashimoto et al. (U.S. 5,956,107).

As to claim 32, Teragaki et al. does not disclose a diffusion plate and a light condensing plate between the light guide and liquid crystal cell. However, it was well known and obvious to provide a diffusion sheet for diffusing light from the light source and a prism sheet for increasing the luminance as taught by Ihara et al. (column 1, lines 10-16). Note the diffusion sheet 15 and prism sheets 16 and 17 in figure 2 of Ihara et al. Note the diffusion sheet 25 and prism sheet 26 in figures 11 and 12 of Kashima et al. Note the prism sheet 6 and scattering sheet 7 in figure 2 of Hashimoto et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of

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invention to provide a diffusion sheet and prism sheet between the light guide and liquid crystal cell in order to diffuse light from the light source and increase the luminance.

As to claim 34, Teragaki et al. discloses a plurality of pyramid shaped prisms on the light emitting surface of light guide 20, as shown in figure 21.

As to claim 35, it was common and conventional to provide multiple prism sheets as shown in figure 2 of Ihara et al. and figure 2 of Hashimoto et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide multiple prism sheets because of the benefits associated with conventional structures such as well-understood behavior and well-established supply chains and manufacturing methodologies.

As to claim 36, the width and length of the prisms shown in figure 21 of Teragaki are substantially smaller than the width and length of the light guide 20.

As to claim 37, the plurality of prisms each have a width that is parallel to the width of the light guide and a length that is parallel to the length of the light guide.

3. Claims 24 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Teragaki et al. (U.S. 6,123,431) in further view Shono et al. (U.S. 5,719,649).

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Teragaki et al. does not disclose the surface roughness of the light guide plate. However, it was well known and obvious to make the surface roughness as small as possible in order to totally reflect incident light within the light guide as taught by Shono et al. See column 7, lines 32-40. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to minimize the surface roughness to 0.05 μm or less in order to totally reflect incident light within the light guide.

Response to Arguments

4. Applicant's arguments with respect to claims 1, 3, 6-12, 15, 23-25, 27, 32 and 34-37 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

5. Claim 2 allowed.

Claim 33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art taught or suggested a liquid crystal display comprising a light guide having a plurality of dots consisting of small projecting portions or small recess portions, provided on a surface opposite to the light emitting surface, each of the

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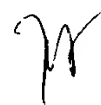
dots having an area between 0.01 and 0.0001 mm² and an angle of inclination between 7° and 43°.

6. Claims 16-22 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art taught or suggested a liquid crystal display comprising a light guide as recited in claim 1, further comprising a reflecting sheet formed on the surface of the dots as recited in claim 16, or further comprising the additional features of the dots recited in claims 17-22.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (703) 306-0155. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.



David Chung
GAU 2871
06/28/03